

EFFECTS OF SINGLE CIRCULAR MOTION, AND OF DOUBLE CIRCULAR MOTION WHEN THE ANGULAR VELOCITIES ARE EQUAL.

When a body turns round a fixed center or axis, either within itself or at any distance, all its particles move in *concentric circles*, larger or smaller according to their relative distance from the fixed center. This is *simple circular motion*.

In *Double circular motion*, when the angular velocities are equal in the *same direction*,—all the particles describe cardioid curves; the different phases varying according to the radial ratio. In Double circular motion, when the angular velocities are equal in *contrary directions*,—all the particles describe *ex-centric circles*, which are *all of the same size* whatever the radial-ratio.

In simply rotating on its own center or axis,—the body turns its surface to all surrounding objects. In simply revolving round a distant center, the body also turns its surface to all surrounding objects, but keeps always the same face to the centre of revolution.

In double circular motion with equal angular velocities when *direct*, that is in the same direction,—the body turns round *once* to the centre of revolution, but *twice* to surrounding objects.

In double circular motion when *inverse*, that is in contrary directions, with equal angular velocities,—the body turns all its surface in succession to the centre of revolution, but not to objects outside the orbit: because the two inverse movements mutually counteract and neutralize each other; and the body maintains the parallelism of its diameters, producing parallel motion in a circle.

Parallel Motion in a Circle, or other Curve, is not a simple or single motion; but compounded of two equal and similar movements in opposite directions, which mutually counteract and neutralise each other's effect of turning round to all points of the compass: the result being a compromise between equal antagonist forces.

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